Model Name: T315XW04 V3

Issue Date : 2010/12/25

( ) Preliminary Specifications
(∗) Final Specifications

Customer Signature	Date	AUO	Date
Approved By		Approval By PM Director YenTing Chiu	
Note		Reviewed By RD Director Eugene CC Chen	
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Record of Revision

Version	Date	Page	Description
0.1	2010/12/25		First release
1.0	2011/02/13	6	Update Backlight Power Consumption
		16	Update Electrical specification
		23	Update front view
		24	Update back view
		25	Update Reliability Test Items
		29	Update Pallet and Shipment Information

1. General Description

This specification applies to the 31.5 inch Color TFT-LCD Module T315XW04 V3. This LCD module has a TFT active matrix type liquid crystal panel 1,366 x 768 pixels, and diagonal size of 31.5 inch. This module supports 1,366 x 768 mode. Each pixel is divided into Red, Green and Blue sub-pixels or dots which are arranged in vertical stripes. Gray scale or the brightness of the sub-pixel color is determined with a 8-bit gray scale signal for each dot.

The T315XW04 V3 has been designed to apply the 8-bit 1 channel LVDS interface method. It is intended to support displays where high brightness, wide viewing angle, high color saturation, and high color depth are very important.

General Information

Items	Specification	Unit	Note
Active Screen Size	31.5	inch	
Display Area	697.685 (H) x 392.256(V)	mm	
Outline Dimension	760.0 (H) x 450.0 (V) x 46.9(D)	mm	With inverter
Driver Element	a-Si TFT active matrix		
Display Colors	8 bit, 16.7M	Colors	
Number of Pixels	1,366 x 768	Pixel	
Pixel Pitch	0.51075	mm	
Pixel Arrangement	RGB horizontal stripe		
Display Operation Mode	Normally Black		
Surface Treatment	Anti-Glare, 3H		Haze=2%
Rotate Function	Unachievable		Note 1

Note 1: Rotate Function refers to LCD display could be able to rotate.

2. Absolute Maximum Ratings

The followings are maximum values which, if exceeded, may cause faulty operation or damage to the unit

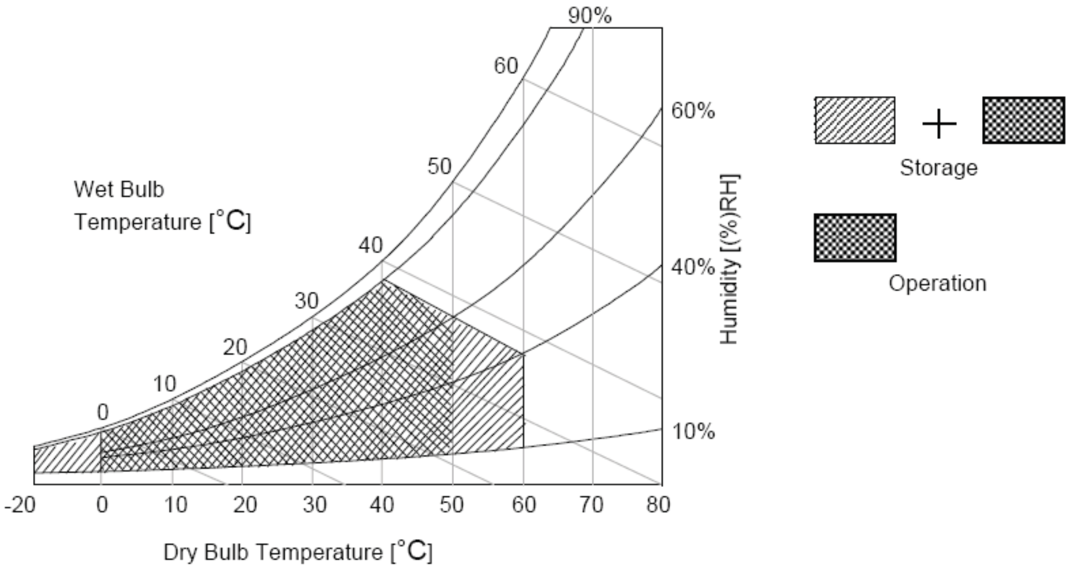
Item	Symbol	Min	Max	Unit	Conditions
Logic/LCD Drive Voltage	V_{DD}	-0.3	14	V_{DC}	Note 1
Input Voltage of Signal	Vin	-0.3	4	V_{DC}	Note 1
Operating Temperature	TOP	0	+50	[°C]	Note 2
Operating Humidity	HOP	10	90	[%RH]	Note 2
Storage Temperature	TST	-20	+60	[°C]	Note 2
Storage Humidity	HST	10	90	[%RH]	Note 2
Panel Surface Temperature	PST	-	65	[°C]	Note 3

Note 1: Duration:50 msec.

Note 2 : Maximum Wet-Bulb should be 39℃ and No condensation.

The relative humidity must not exceed 90% non-condensing at temperatures of 40℃ or less. At temperatures greater than 40℃, the wet bulb temperature must not exceed 39℃.

Note 3: Surface temperature is measured at 50℃ Dry condition



3. Electrical Specification

The T315XW04 V3 requires two power inputs. One is employed to power the LCD electronics and to drive the TFT array and liquid crystal. The second input for BLU is to power inverter.

3-1 Electrical Characteristics

Parameter		Symbol	Value			Unit	Note
			Min.	Typ.	Max		
LCD							
Power Supply Input Voltage		V_{DD}	10.8	12	13.2	V_{DC}	
Power Supply Input Current		I_{DD}	--	0.3	0.4	A	1
Power Consumption		P_C	--	3.6	4.32	Watt	1
Inrush Current		I_{RUSH}	--	--	3	A	2
LVDS Interface	Input Differential Voltage	$\lvert V_{ID} \rvert$	200	400	600	mV_{DC}	3
	Differential Input High Threshold Voltage	V_{TH}	+100	--	+300	mV_{DC}	3
	Differential Input Low Threshold Voltage	V_{TL}	-300	--	-100	mV_{DC}	3
	Input Common Mode Voltage	V_{ICM}	1.1	1.25	1.4	V_{DC}	3
DCR Interface	DIM_IN	F_{DIM_IN}	140	--	240	Hz	4
		D_{DIM_IN}	TBD	--	100	%	4
	DIM_OUT	F_{DIM_OUT}	--	180	--	Hz	4
		D_{DIM_OUT}	TBD	--	100	%	4
CMOS Interface	Input High Threshold Voltage	V_{IH} (High)	2.7	--	3.3	V_{DC}	5
	Input Low Threshold Voltage	V_{IL} (Low)	0	--	0.6	V_{DC}	5
Backlight Power Consumption		P_{BL}		55		Watt	--
Life Time			50,000	--	--	Hours	10.11

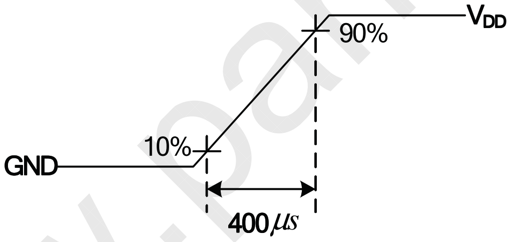
3-2 AC Characteristics

Parameter		Symbol	Value			Unit	Note
			Min.	Typ.	Max		
LVDS Interface	Input Channel Pair Skew Margin	$t_{SKEW\ (CP)}$	-500	--	+500	ps	6
	Receiver Clock : Spread Spectrum Modulation range	Fclk_ss	Fclk -3%	--	Fclk +3%	MHz	7
	Receiver Clock : Spread Spectrum Modulation frequency	Fss	30	--	200	KHz	7
	Receiver Data Input Margin Fclk = 85 MHz Fclk = 65 MHz	tRMG	 -0.4 -0.5	 -- --	 0.4 0.5	ns	8

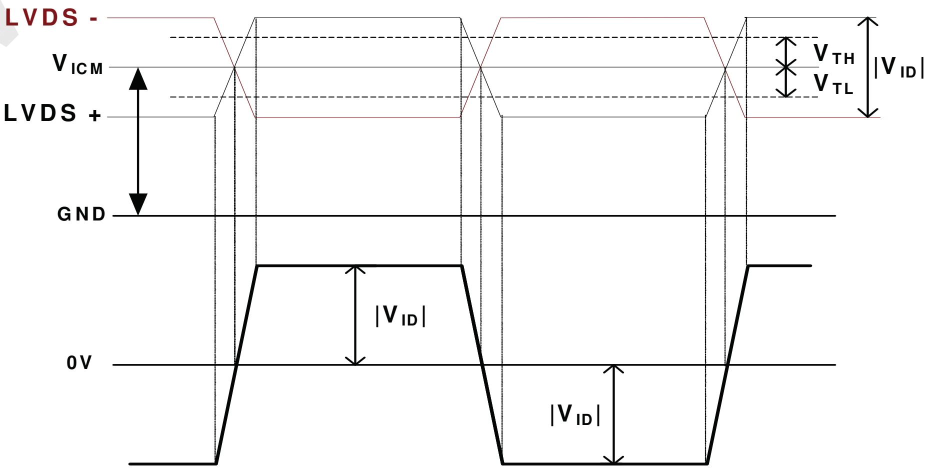
Note :

1. Test Condition:
   (1) V_{DD} = 12.0V
   (2) Fv = 60Hz
   (3) F_{CIK} = 82 Mhz
   (4) Temperature = 25 ℃
   (5) Test Pattern : White Pattern

2. Measurement condition : Rising time = 400us



3. V_{ICM} = 1.25V



4. DCR Interface: Function Table

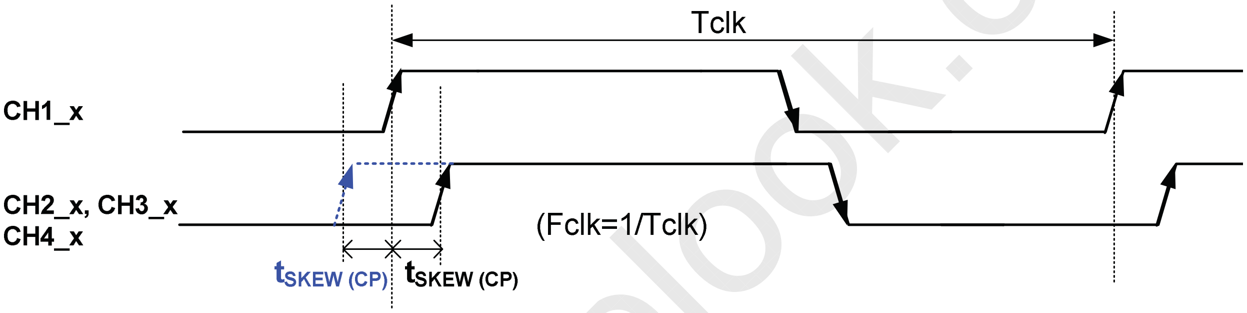
Input		Output
DCR_Enable	DIM_IN	DIM_OUT
High	PWM Input	DCR Dimming Out
Low	PWM Input	PWM Input
NC	NC	Keep High

Note.(4-1) : During the deep duty control, partial darkness or center darkness might happen due to insufficient lamp current.

Note.(4-2): At low temperature, more warm up time may be needed.

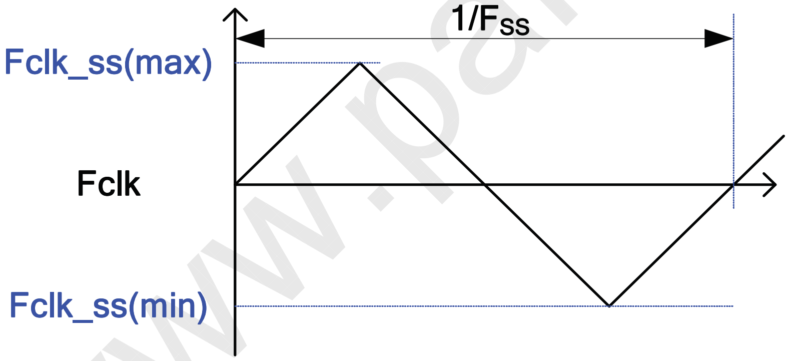
5. The measure points of V_{IH} and V_{IL} are in LCM side after connecting the System Board and LCM.

6. Input Channel Pair Skew Margin


Tclk
CH1_x
CH2_x, CH3_x
CH4_x
(Fclk=1/Tclk)
tSKEW (CP)
tSKEW (CP)

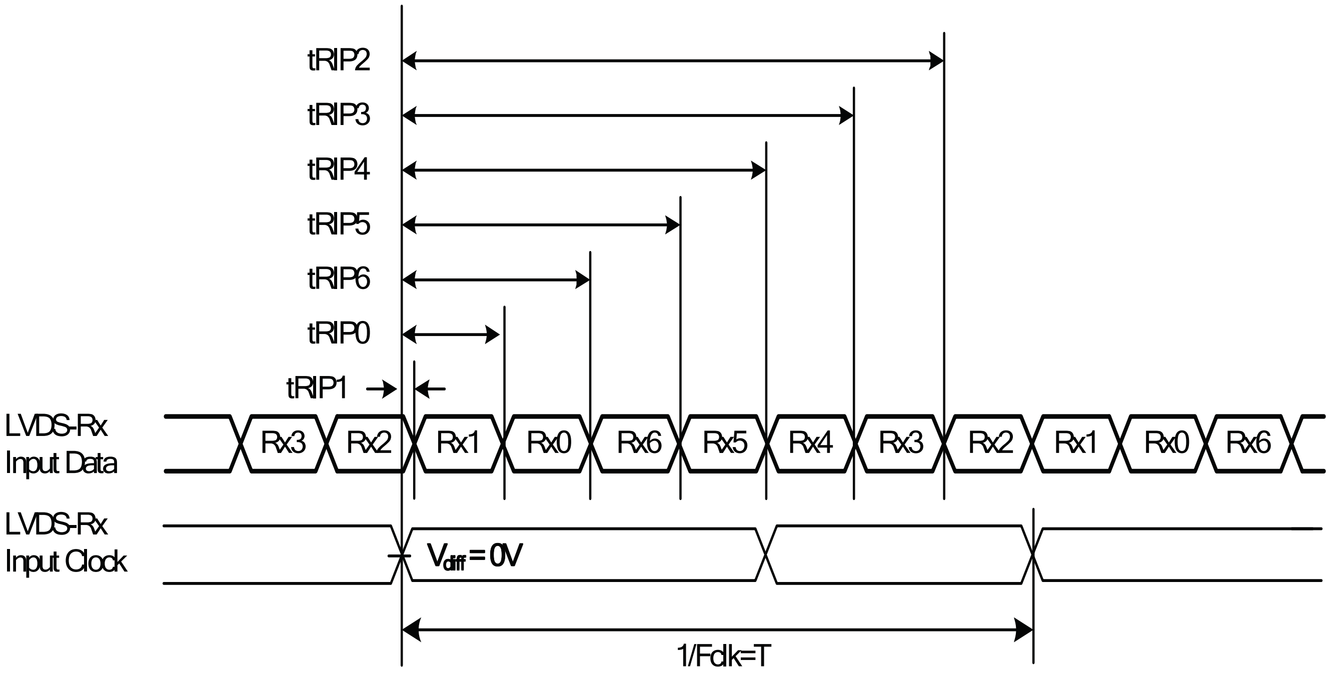
Note: x = 0, 1, 2, 3, 4

7. LVDS Receiver Clock SSCG (Spread spectrum clock generator) is defined as below figures


1/FSS
Fclk_ss(max)
Fclk
Fclk_ss(min)

8. Receiver Data Input Margin

Parameter	Symbol	Rating			Unit	Note
		Min	Type	Max		
Input Clock Frequency	Fclk	Fclk (min)	--	Fclk (max)	MHz	**T=1/Fclk**
Input Data Position0	tRIP1	-|tRMG|	0	|tRMG|	ns	
Input Data Position1	tRIP0	T/7-|tRMG|	T/7	T/7+|tRMG|	ns	
Input Data Position2	tRIP6	2T/7-|tRMG|	2T/7	2T/7+|tRMG|	ns	
Input Data Position3	tRIP5	3T/7-|tRMG|	3T/7	3T/7+|tRMG|	ns	
Input Data Position4	tRIP4	4T/7-|tRMG|	4T/7	4T/7+|tRMG|	ns	
Input Data Position5	tRIP3	5T/7-|tRMG|	5T/7	5T/7+|tRMG|	ns	
Input Data Position6	tRIP2	6T/7-|tRMG|	6T/7	6T/7+|tRMG|	ns	



9. Do not attach a conducting tape to lamp connecting wire. If the lamp wire attach to conducting tape, TFT-LCD Module have a low luminance and the inverter has abnormal action because leakage current occurs between lamp wire and conducting tape.

10. The relative humidity must not exceed 80% non-condensing at temperatures of 40℃ or less. At temperatures greater than 40℃, the wet bulb temperature must not exceed 39℃. When operate at low temperatures, the brightness of CCFL will drop and the life time of CCFL will be reduced.

11. Specified values are for a single lamp only which is aligned horizontally. The lifetime is defined as the time which luminance of the lamp is 50% compared to its original value.
[Operating condition: Continuous operating at Ta = 25±2℃]

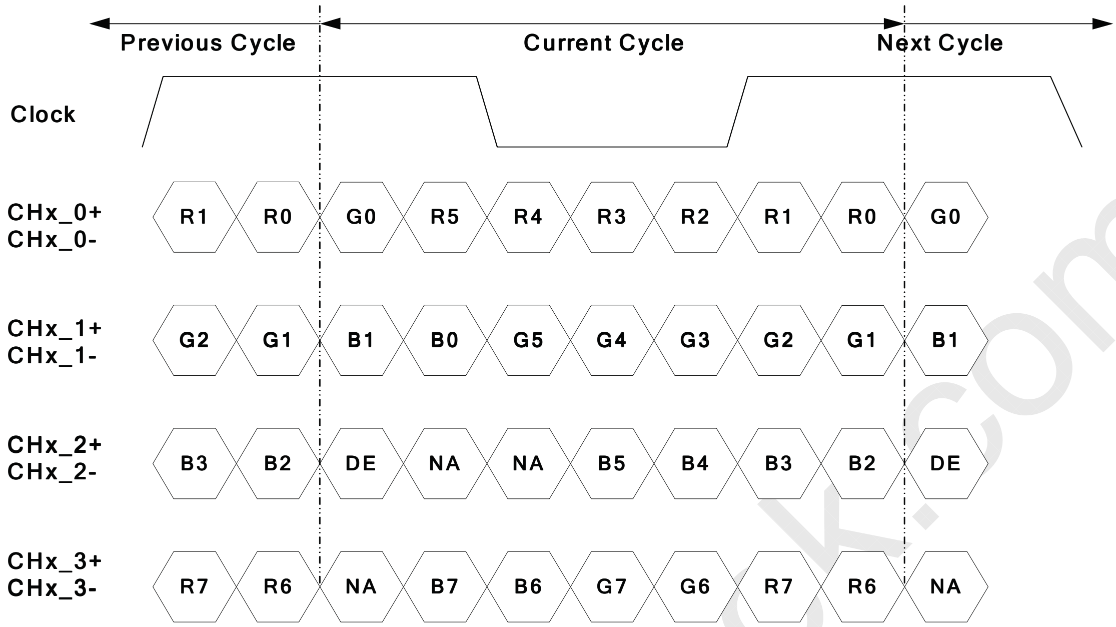
3-3 Interface Connections

- LCD connector: 093G30-B0001A-1 (Starconn, LVDS connector)
-

PIN	Symbol	Description
1	V_{DD}	Power Supply, +12V DC Regulated
2	V_{DD}	Power Supply, +12V DC Regulated
3	V_{DD}	Power Supply, +12V DC Regulated
4	V_{DD}	Power Supply, +12V DC Regulated
5	GND	Ground
6	GND	Ground
7	GND	Ground
8	GND	Ground
9	LVDS_SEL	Open/High(3.3V) for NS, Low(GND) for JEIDA
10	N.C.	AUO Internal Use Only
11	GND	Ground
12	CH1_0-	LVDS Channel 1, Signal 0-
13	CH1_0+	LVDS Channel 1, Signal 0+
14	GND	Ground
15	CH1_1-	LVDS Channel 1, Signal 1-
16	CH1_1+	LVDS Channel 1, Signal 1+
17	GND	Ground
18	CH1_2-	LVDS Channel 1, Signal 2-
19	CH1_2+	LVDS Channel 1, Signal 2+
20	GND	Ground
21	CH1_CLK-	LVDS Channel 1, Clock -
22	CH1_CLK+	LVDS Channel 1, Clock +
23	GND	Ground
24	CH1_3-	LVDS Channel 1, Signal 3-
25	CH1_3+	LVDS Channel 1, Signal 3+
26	GND	Ground
27	N.C.	AUO Internal Use Only
28	N.C.	AUO Internal Use Only
29	GND	Ground
30	GND	Ground

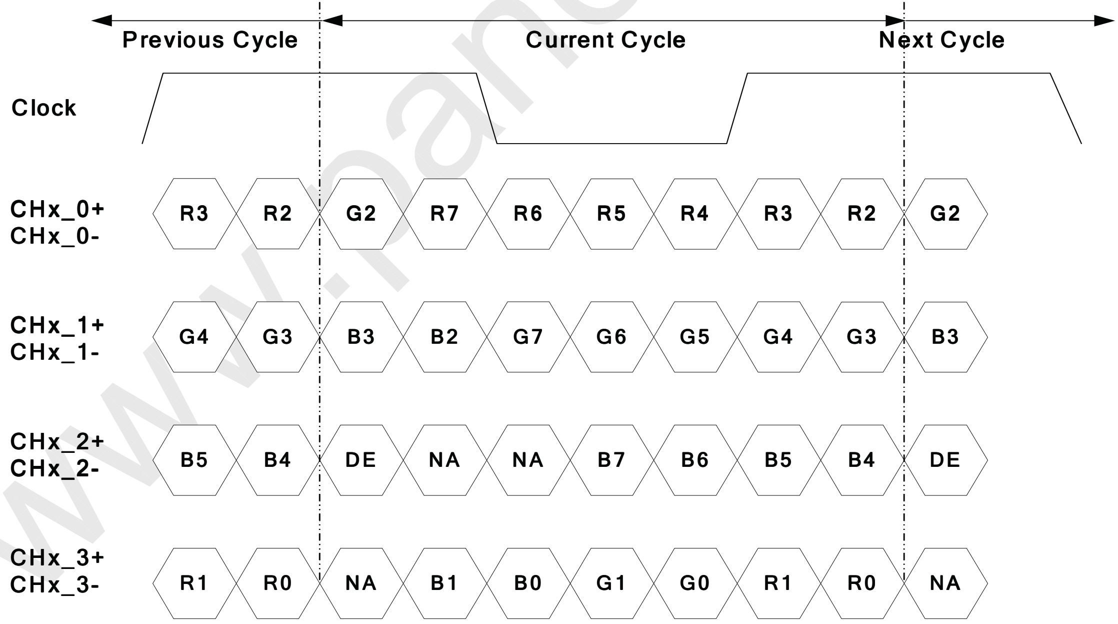
Note: N.C. : please leave this pin unoccupied. It can not be connected by any signal (Low/GND/High).

- **LVDS Option = High/Open → NS**


Previous Cycle
Current Cycle
Next Cycle
Clock
CHx_0+
CHx_0-
R1 R0 G0 R5 R4 R3 R2 R1 R0 G0
CHx_1+
CHx_1-
G2 G1 B1 B0 G5 G4 G3 G2 G1 B1
CHx_2+
CHx_2-
B3 B2 DE NA NA B5 B4 B3 B2 DE
CHx_3+
CHx_3-
R7 R6 NA B7 B6 G7 G6 R7 R6 NA

Note: x = 1, 2, 3, 4…

- **LVDS Option = Low → JEIDA**


Previous Cycle
Current Cycle
Next Cycle
Clock
CHx_0+
CHx_0-
R3 R2 G2 R7 R6 R5 R4 R3 R2 G2
CHx_1+
CHx_1-
G4 G3 B3 B2 G7 G6 G5 G4 G3 B3
CHx_2+
CHx_2-
B5 B4 DE NA NA B7 B6 B5 B4 DE
CHx_3+
CHx_3-
R1 R0 NA B1 B0 G1 G0 R1 R0 NA

Note: x = 1, 2, 3, 4…

3-4 Signal Timing Specification

This is the signal timing required at the input of the user connector. All of the interface signal timing should be satisfied with the following specifications for its proper operation.

Signal	Item	Symbol	Min.	Typ.	Max	Unit
Vertical Section	Period	Tv	784	810	1015	Th
	Active	Tdisp (v)		768		Th
	Blanking	Tblk (v)	16	42	247	Th
Horizontal Section	Period	Th	1460	1648	2000	Tclk
	Active	Tdisp (h)		1366		Tclk
	Blanking	Tblk (h)	94	282	634	Tclk
Clock	Frequency	Fclk=1/Tclk	50	80	86	MHz
Vertical Frequency	Frequency	Fv	47	60	63	Hz
Horizontal Frequency	Frequency	Fh	43	48	53	KHz

Notes:

(1) Display position is specific by the rise of DE signal only.

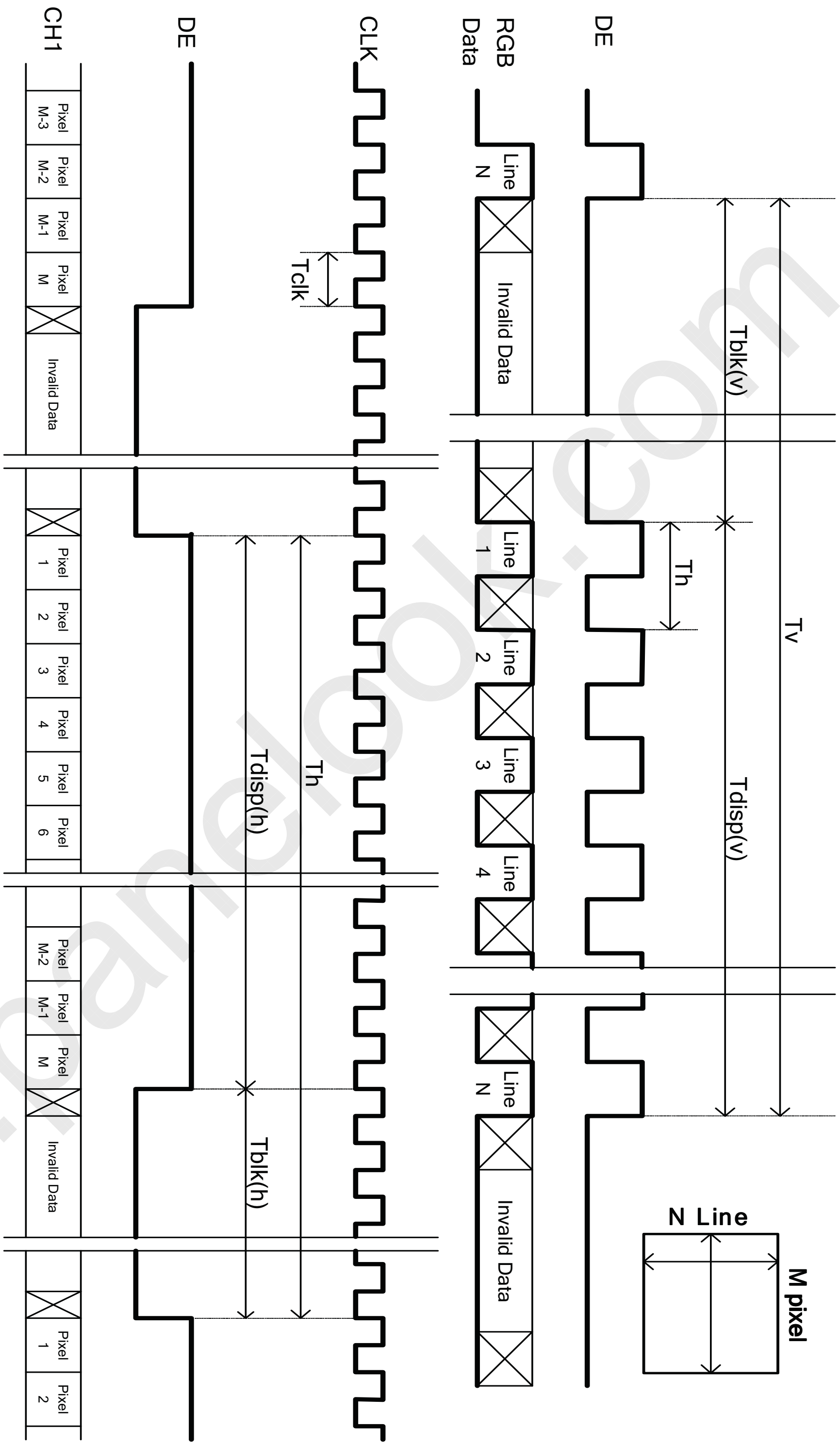
Horizontal display position is specified by the rising edge of 1st DCLK after the rise of 1st DE, is displayed on the left edge of the screen.

(2)Vertical display position is specified by the rise of DE after a "Low" level period equivalent to eight times of horizontal period. The 1st data corresponding to one horizontal line after the rise of 1st DE is displayed at the top line of screen.

(3)If a period of DE "High" is less than 1366 DCLK or less than 768 lines, the rest of the screen displays black.

(4)The display position does not fit to the screen if a period of DE "High" and the effective data period do not synchronize with each other.

3-5 Signal Timing Waveforms


CH1
DE
CLK
RGB Data
DE
Pixel M-3
Pixel M-2
Pixel M-1
Pixel M
Invalid Data
Pixel 1
Pixel 2
Pixel 3
Pixel 4
Pixel 5
Pixel 6
Pixel M-2
Pixel M-1
Pixel M
Invalid Data
Pixel 1
Pixel 2
Tclk
Tdisp(h)
Th
Tblk(h)
Line N
Invalid Data
Line 1
Line 2
Line 3
Line 4
Line N
Invalid Data
Tblk(v)
Th
Tv
Tdisp(v)
N Line
M pixel

3-6 Color Input Data Reference

The brightness of each primary color (red, green and blue) is based on the 8 bit gray scale data input for the color; the higher the binary input, the brighter the color. The table below provides a reference for color versus data input.

- **Color Data Reference**

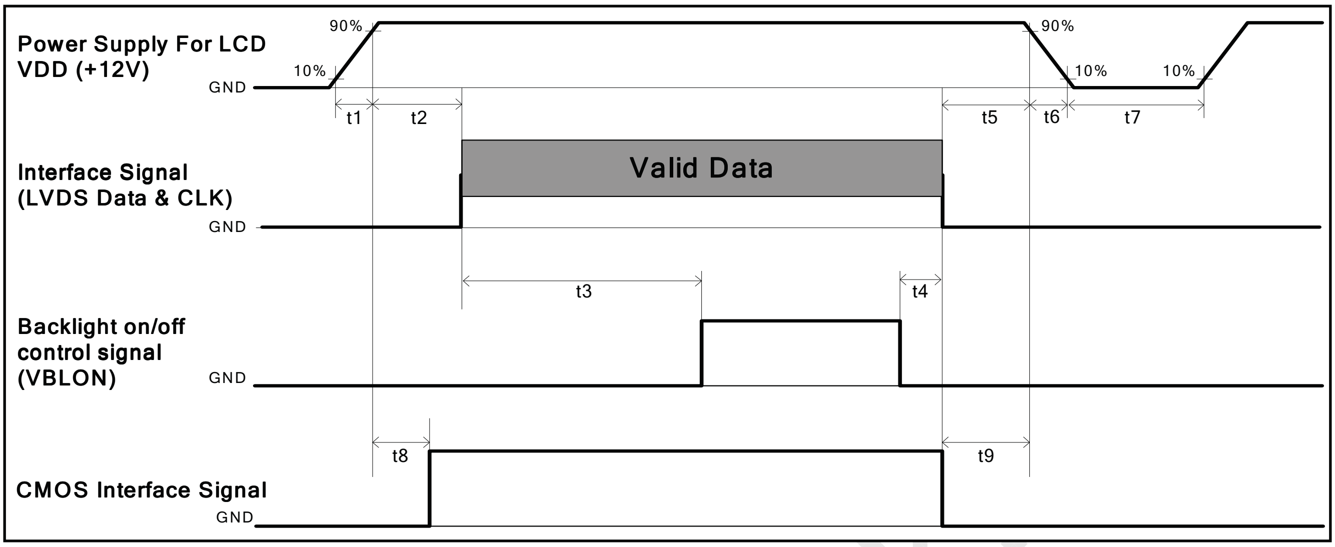
Color		Input Color Data																							
		RED								GREEN								BLUE							
		MSB							LSB	MSB							LSB	MSB							LSB
		R7	R6	R5	R4	R3	R2	R1	R0	G7	G6	G5	G4	G3	G2	G1	G0	B7	B6	B5	B4	B3	B2	B1	B0
Basic Color	Black	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Red(255)	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Green(255)	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0
	Blue(255)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1
	Cyan	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Magenta	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1
	Yellow	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0
	White	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
R	RED(000)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	RED(001)	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

	RED(254)	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	RED(255)	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G	GREEN(000)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	GREEN(001)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0

	GREEN(254)	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0
	GREEN(255)	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0
B	BLUE(000)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BLUE(001)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1

	BLUE(254)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	0
	BLUE(255)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1

3-7 Power Sequence for LCD


Power Supply For LCD
VDD (+12V)
GND
90%
10%
90%
10%
10%
t1
t2
t5
t6
t7
Interface Signal
(LVDS Data & CLK)
GND
Valid Data
t3
t4
Backlight on/off
control signal
(VBLON)
GND
t8
t9
CMOS Interface Signal
GND

Parameter	Values			Unit
	Min.	Type.	Max.	
t1	0.4	---	30	ms
t2	0.1	---	**50**	ms
t3	**450**	---	---	ms
t4	0[*1]	---	---	ms
t5	0	---	---	ms
t6	---	---	---[*2]	ms
t7	500	---	---	ms
t8	10	---	50	ms
t9	0	---	---	ms

Note:
(1) t4=0 : concern for residual pattern before BLU turn off.
(2) t6 : voltage of VDD must decay smoothly after power-off. (customer system decide this value)

3-7 Backlight Specification (Inverter Type)

The backlight unit contains 4U CCFLs (Cold Cathode Fluorescent Lamp)

3-7-1 Electrical specification

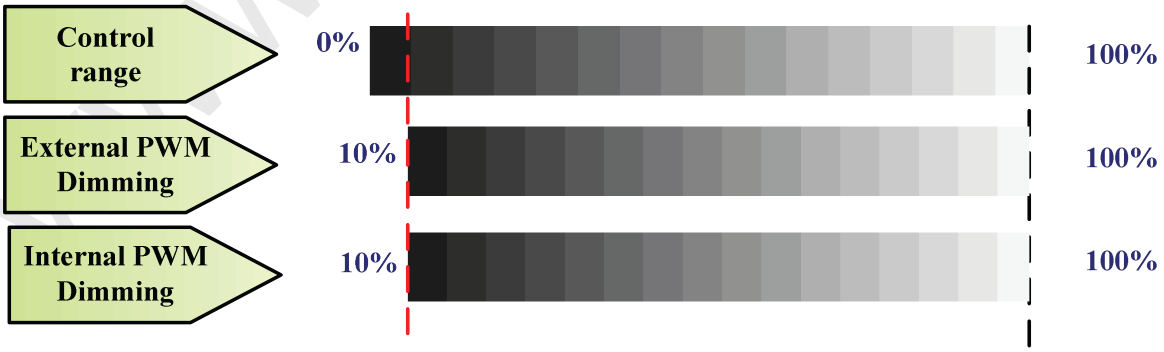
Item	Symbol		Condition	Spec			Unit	Note
				Min	Typ	Max		
Input Voltage	V_{DDB}		-	21.6	24	26.4	VDC	-
Input Current	I_{DDB}		VDDB=24V	2.	2.29	2.40	ADC	1
Input Power	P_{DDB}		VDDB=24V	52.25	55	57.75	W	1
Inrush Current	I_{RUSH}		VDDB=24V	-	-	5.25	ADC	2
Operating Frequency	FBL		VDDB=24V	53	55	57	KHz	
On/Off control voltage	V_{BLON}	ON	VDDB=24V	2	-	5.5	VDC	-
		OFF		-0.3	-	0.8		-
On/Off control current	I_{BLON}		VDDB=24V	-	-	1.5	mA	-
Internal PWM Dimming Control Voltage	V_IPWM	MAX	VDDB=24V	3.1	-	3.3	VDC	-
		MIN		-	0	-	VDC	-
Internal PWM Dimming Control Current	I_IPWM		VDDB=24V	-	-	2	mADC	-
Internal PWM Dimming Ratio	R_IPWM		VDDB=24V	10	-	100	%	
External PWM Control Voltage	V_EPWM	MAX	VDDB=24V	2	-	3.3	VDC	-
		MIN	VDDB=24V	-0.3	-	0.8		-
External PWM Control Current	I_EPWM		VDDB=24V	-	-	2	mADC	-
External PWM Duty ratio	D_EPWM		VDDB=24V	10	-	100	%	3
External PWM Frequency	F_EPWM		VDDB=24V	140		240	Hz	-

Note 1 : Dimming ratio= 100% (MAX)（Ta=25±5℃, Turn on for 45minutes）
Note 2 : Measurement condition Rising time = 20ms (VDDB : 10%~90%);
Note 3 : For External PWM application, no backlight shutdown when 0% dimming hold time <10sec

3-7-2 Input Pin Assignment

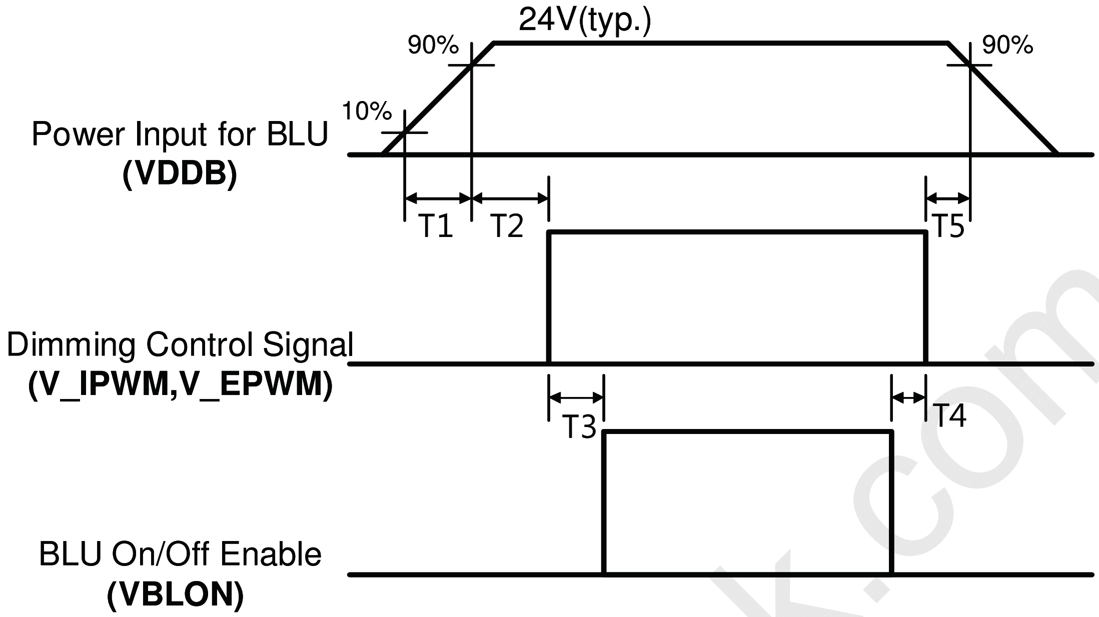
- **Inverter Connector: CI0114M1HRL-NH (Cvilux)**

Pin	Symbol	Description
1	VDDB	Operating Voltage Supply, +24V DC regulated
2	VDDB	Operating Voltage Supply, +24V DC regulated
3	VDDB	Operating Voltage Supply, +24V DC regulated
4	VDDB	Operating Voltage Supply, +24V DC regulated
5	VDDB	Operating Voltage Supply, +24V DC regulated
6	BLGND	Ground and Current Return
7	BLGND	Ground and Current Return
8	BLGND	Ground and Current Return
9	BLGND	Ground and Current Return
10	BLGND	Ground and Current Return
11	DET	BLU status detection: Normal : 0~0.8V ; Abnormal : Open collector
12	VBLON	BLU On-Off control: BL On : High/Open (2V~5.5V); BL off : Low (0~0.8V/GND)
13	VDIM	Internal PWM (0~3.3V for 10~100% Duty, open for 100%) < NC ; at External PWM mode>
14	PDIM	External PWM (10%~100% Duty, open for 100%) < NC ; at Internal PWM mode>

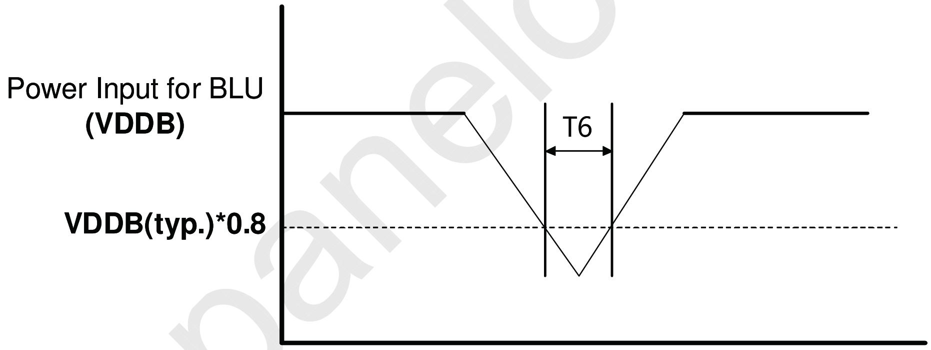


PWM Dimming : include Internal and External PWM Dimming

3-7-3 Power Sequence for Inverter


24V(typ.)
90%
90%
10%
Power Input for BLU
(VDDB)
T1
T2
T5
Dimming Control Signal
(V_IPWM,V_EPWM)
T3
T4
BLU On/Off Enable
(VBLON)

- **Dip condition for Inverter**

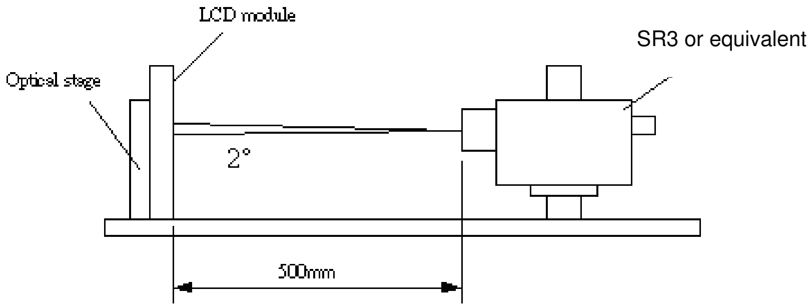

Power Input for BLU
(VDDB)
T6
VDDB(typ.)*0.8

Parameter	Value			Units
	Min	Typ	Max	
T1	20	-	-	ms
T2	500	-	-	ms
T3	250	-	-	ms
T4	0	-	-	ms
T5	1	-	-	ms
T6	-	-	10	ms

4. Optical Specification

Optical characteristics are determined after the unit has been ‘ON’ and stable for approximately 45 minutes in a dark environment at 25℃. The values specified are at an approximate distance 50cm from the LCD surface at a viewing angle of φ and θ equal to 0°.

Fig.1 presents additional information concerning the measurement equipment and method.



Parameter		Symbol	Values			Unit	Notes
			Min.	Typ.	Max		
Contrast Ratio		CR	2,400	3,000	--	--	1
Surface Luminance (White)		L_{WH}	320	400	--	cd/m^2	2
Luminance Variation		$\delta_{WHITE(9P)}$	--	--	1.3	--	3
Response Time (G to G)		$T\gamma$	--	6.5	--	ms	4
Color Gamut		NTSC	--	72	--	%	--
Color Coordinates	Red	R_X	Typ.-0.03	0.64	Typ.+0.03	--	--
		R_Y		0.33		--	--
	Green	G_X		0.29		--	--
		G_Y		0.60		--	--
	Blue	B_X		0.15		--	--
		B_Y		0.06		--	--
	White	W_X		0.280		--	--
		W_Y		0.290		--	--
Viewing Angle	x axis, right(φ=0°)	θ_r	--	89	--	degree	5
	x axis, left(φ=180°)	θ_l	--	89	--	degree	5
	y axis, up(φ=90°)	θ_u	--	89	--	degree	5
	y axis, down (φ=270°)	θ_d	--	89	--	degree	5

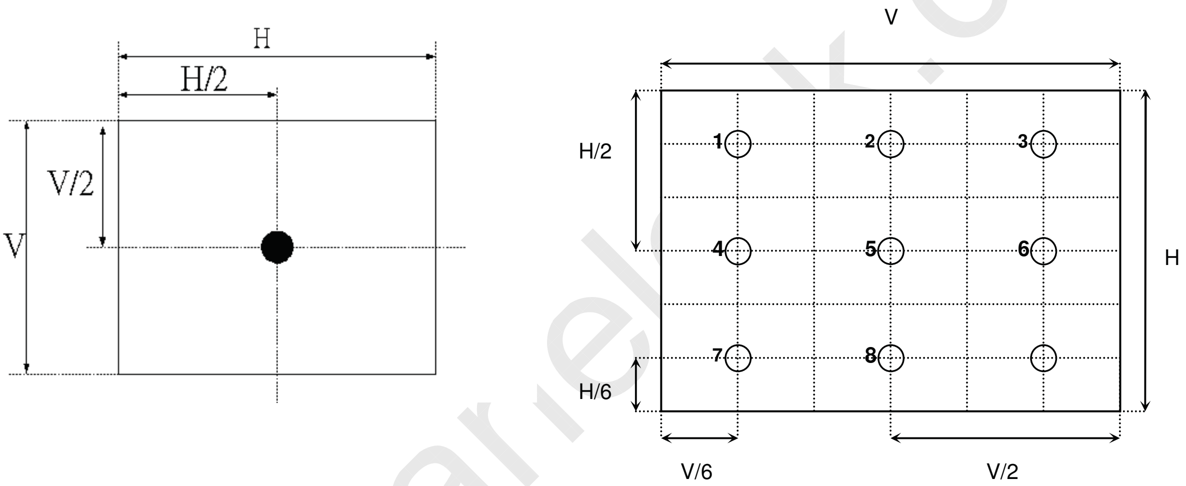
Note:

1. Contrast Ratio (CR) is defined mathematically as:

$$\textbf{Contrast Ratio=}\frac{\textbf{Surface Luminance of } L_{on5}}{\textbf{Surface Luminance of } L_{off5}}$$

2. Surface luminance is luminance value at point 5 across the LCD surface 50cm from the surface with all pixels displaying white. From more information see Fig 2.L_{WH}=Lon5 where Lon5 is the luminance with all pixels displaying white at center 5 location.

Fig 2 Luminance



3. The variation in surface luminance, δWHITE is defined (center of screen) as:

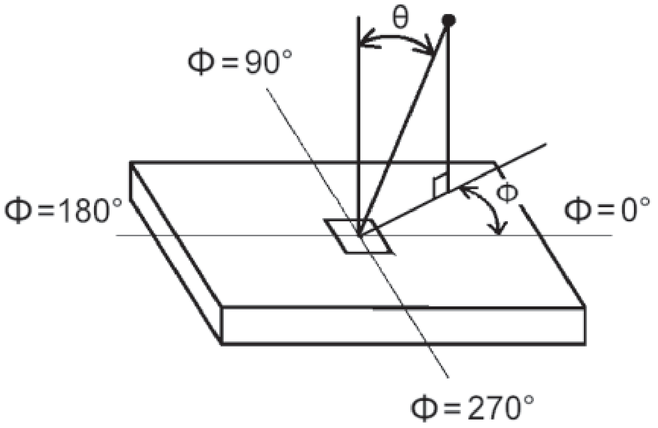
   $\delta_{WHITE(9P)}$= Maximum(L_{on1}, L_{on2},…,L_{on9})/ Minimum(L_{on1}, L_{on2},…L_{on9})

4. Response time T_{γ} is the average time required for display transition by switching the input signal for five luminance ratio (0%,25%,50%,75%,100% brightness matrix) and is based on F_v=60Hz to optimize.

Measured Response Time		Target				
		0%	25%	50%	75%	100%
Start	0%		0% to 25%	0% to 50%	0% to 75%	0% to 100%
	25%	25% to 0%		25% to 50%	25% to 75%	25% to 100%
	50%	50% to 0%	50% to 25%		50% to 75%	50% to 100%
	75%	75% to 0%	75% to 25%	75% to 50%		75% to 100%
	100%	100% to 0%	100% to 25%	100% to 50%	100% to 75%	

5. Viewing angle is the angle at which the contrast ratio is greater than 10. The angles are determined for the horizontal or x axis and the vertical or y axis with respect to the z axis which is normal to the LCD surface. For more information see Fig 3.

Fig 3 Viewing Angle

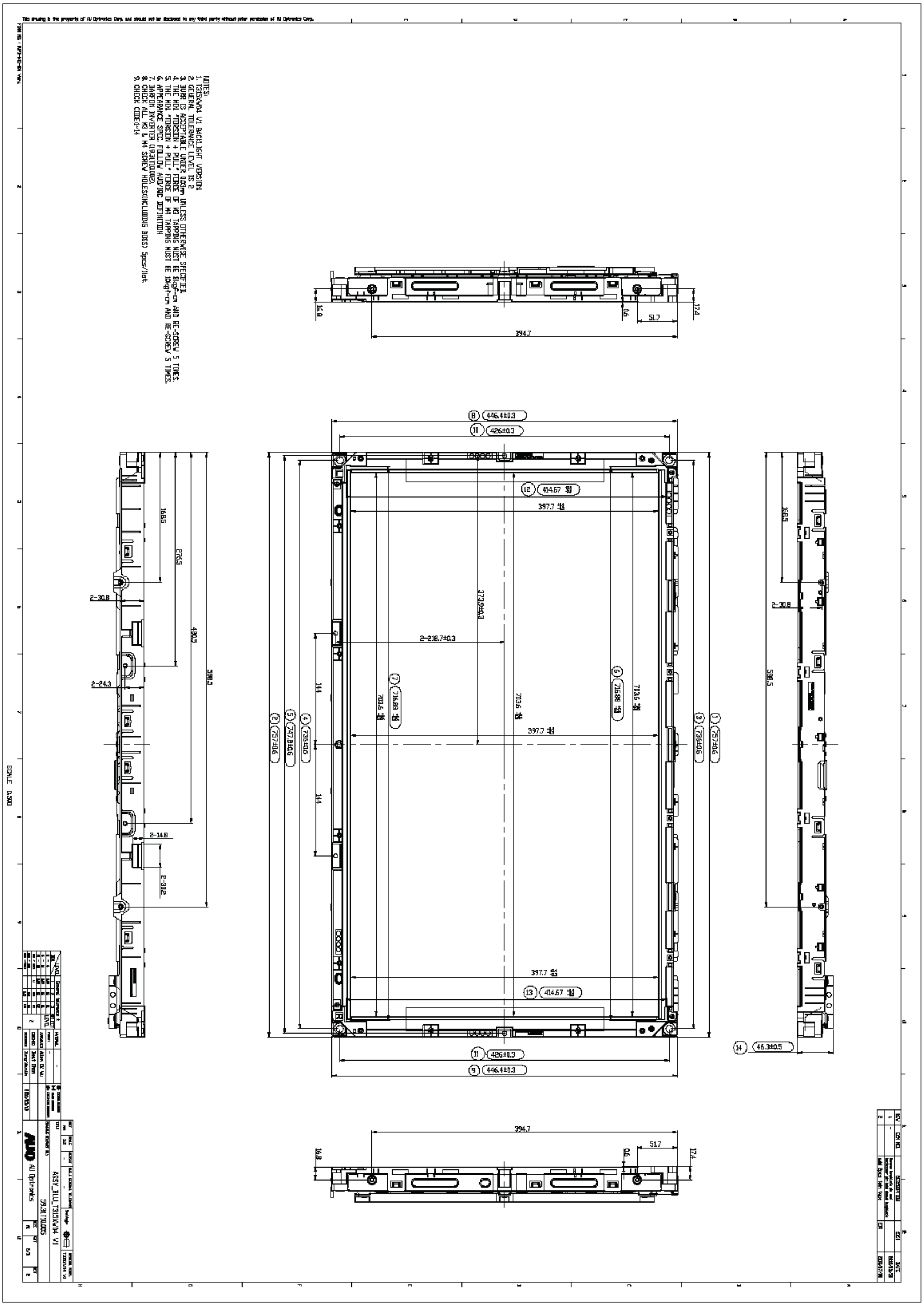


5. Mechanical Characteristics

The contents provide general mechanical characteristics for the model T315XW04 V3. In addition the figures in the next page are detailed mechanical drawing of the LCD.

Outline Dimension	Horizontal	760.0mm
	Vertical	450.0mm
	Depth	46.9mm (w/ inverter & shielding)
Bezel Opening	Horizontal	703.6mm
	Vertical	398.3mm
Active Display Area	Horizontal	697.685mm
	Vertical	392.256mm
Weight	5,000 g (Typ.)	
Surface Treatment	AG, Haze=2%, 3H	

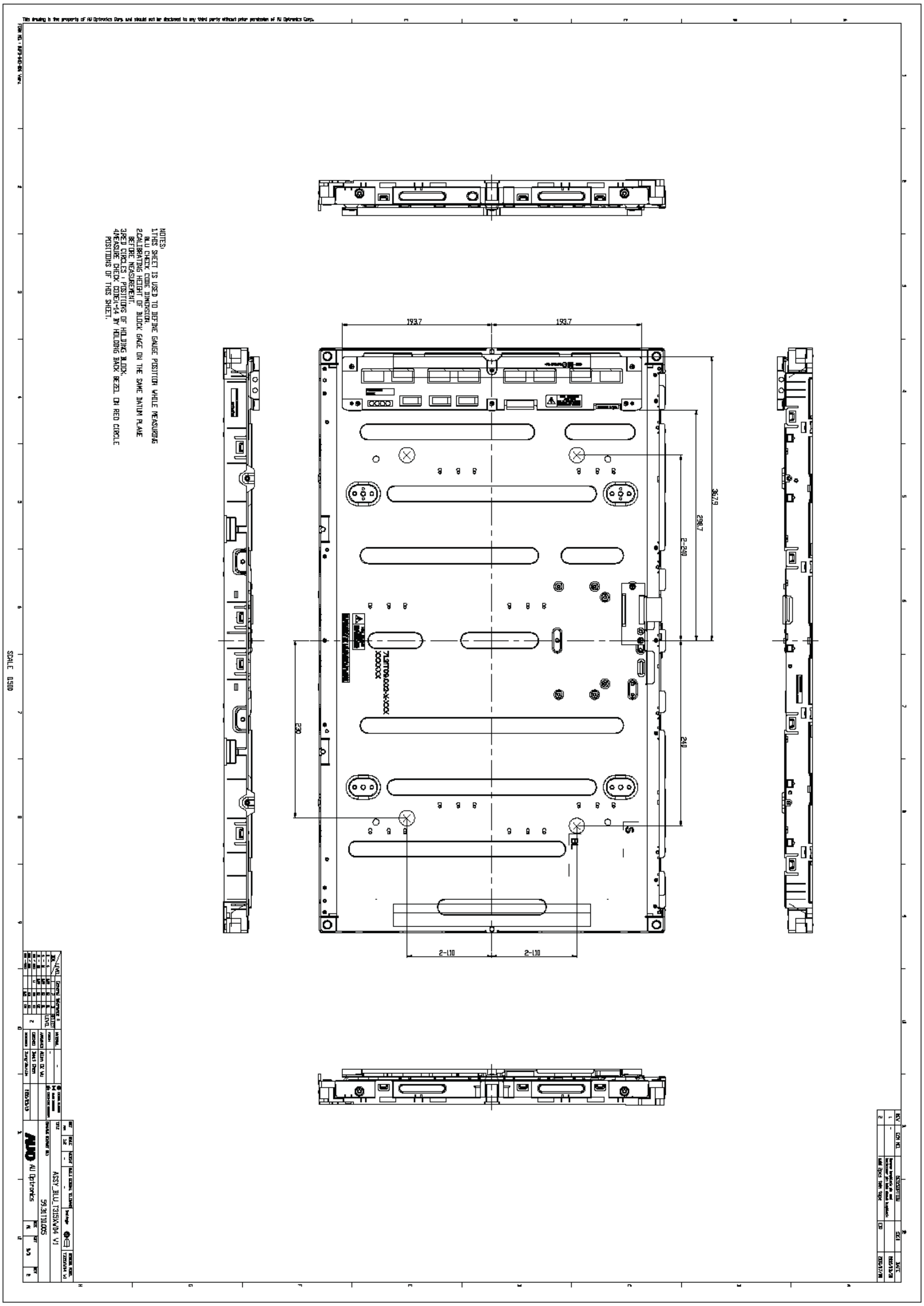
- **Front View**



NOTES:
1. T315XW04 V1 BACKLIGHT VERSION.
2. GENERAL TOLERANCE LEVEL IS 2
3. BURR IS ACCEPTABLE UNDER 0.03mm UNLESS OTHERWISE SPECIFIED.
4. THE MIN "TORSION + PULL" FORCE OF M3 TAPPING MUST BE 8kgf-cm AND RE-SCREW 5 TIMES.
5. THE MIN "TORSION + PULL" FORCE OF M4 TAPPING MUST BE 10kgf-cm AND RE-SCREW 5 TIMES.
6. APPEARANCE SPEC. FOLLOW AUO/IQC DEFINITION
7. DARFON INVERTER (19.31T10.002).
8. CHECK ALL M3 & M4 SCREW HOLES(INCLUDING BOSS) 5pcs/1lot.
9. CHECK CODE①~⑭

394.7
16.8
17.4
51.7
0.6
⑧ 446.4±0.3
⑩ 426±0.3
⑫ 414.67
397.7
373.9±0.3
2-218.7±0.3
144
⑦ 716.88
703.6
⑥ 716.88
⑤ 747.8±0.6
④ 736±0.6
② 757±0.6
③ 736±0.6
① 757±0.6
⑬ 414.67
⑪ 426±0.3
⑨ 446.4±0.3
⑭ 46.3±0.5
168.5
276.5
2-30.8
2-24.3
430.5
598.5
2-14.8
2-30.2
SCALE 0.300
ASSY_BLU_T315XW04 V1
59.31T10.005
AU Optronics

- **Back View**



NOTES:
1.THIS SHEET IS USED TO DEFINE GAUGE POSITION WHILE MEASURING
BLU CHECK CODE DIMENSION.
2.CALIBRATING HEIGHT OF BLOCK GAGE ON THE SAME DATUM PLANE
BEFORE MEASUREMENT.
3.RED CIRCLES : POSITIONS OF HOLDING BLOCK.
4.MEASURE CHECK CODE(1~14) BY HOLDING BACK BEZEL ON RED CIRCLE
POSITIONS OF THIS SHEET.

193.7
193.7
367.9
298.7
2-240
240
230
2-130
2-130
SCALE 0.500
ASSY_BLU_T315XW04 V1
99.31T10.005
AU Optronics

6. Reliability Test Items

No.	Test Item	Q'ty	Condition
1	High temperature storage test	3	60℃, 300hrs
2	Low temperature storage test	3	-20℃, 300hrs
3	High temperature operation test	3	50℃, 300hrs
4	Low temperature operation test	3	-5℃, 300hrs
5	Vibration test (non-operation)	3	Wave form : random Vibration level : 1.5G RMS Bandwidth: 10-300Hz Duration: X, Y, Z 30min One time for each direction
6	Shock test (non-operation)	3	Shock level: 50G Waveform: half since wave, 11ms Direction: ±X, ±Y, ±Z, One time each direction
7	Vibration test (With carton)	4	Random wave (1.5G RMS, 10-200Hz) 30mins/ Per each X,Y,Z axes
8	Drop test (With carton)	4	Height: 45.7 cm 1 corner, 3 edges, 6 surfaces (ASTMD4169-I)

7. International Standard

7-1 Safety

(1) UL 60950-1, UL 60065; Standard for Safety of Information Technology Equipment Including electrical Business Equipment.

(2) IEC 60950-1 : 2001, IEC 60065:2001 ; Standard for Safety of International Electrotechnical Commission

(3) EN 60950 : 2001+A11, EN 60065:2002+A1:2006; European Committee for Electrotechnical Standardization (CENELEC), EUROPEAN STANDARD for Safety of Information Technology Equipment Including Electrical Business Equipment.

7.2 EMC

(1) ANSI C63.4 “Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electrical Equipment in the Range of 9kHz to 40GHz. “American National standards Institute(ANSI), 1992

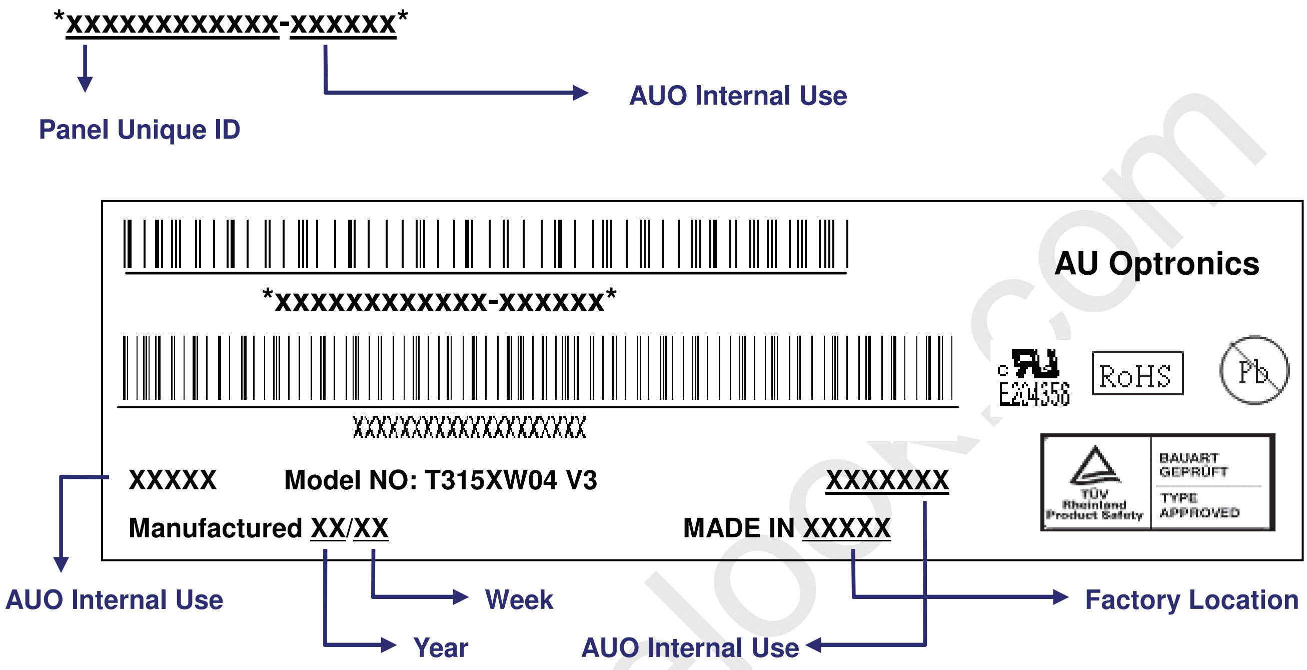
(2) C.I.S.P.R “Limits and Methods of Measurement of Radio Interface Characteristics of Information Technology Equipment.” International Special committee on Radio Interference.

(3) EN 55022 “Limits and Methods of Measurement of Radio Interface Characteristics of Information Technology Equipment.” European Committee for Electrotechnical Standardization. (CENELEC), 1998

8. Packing

8-1 Definition of Label

- **Panel Label**


xxxxxxxxxxxx-xxxxxx

AU Optronics

xxxxxxxxxxxx-xxxxxx

XXXXXXXXXXXXXXXXXXXX

XXXXX Model NO: T315XW04 V3 XXXXXXX

Manufactured XX/XX MADE IN XXXXX

Panel Unique ID
AUO Internal Use
c RU us E204356
RoHS
Pb
TÜV Rheinland Product Safety
BAUART GEPRÜFT
TYPE APPROVED
AUO Internal Use
Week
Year
AUO Internal Use
Factory Location

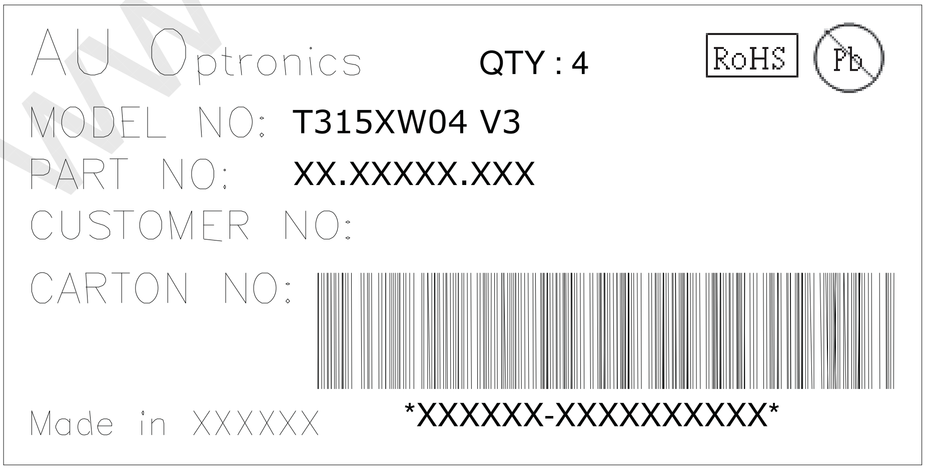
Green mark description

(1) For Pb Free Product, AUO will add Pb for identification.

(2) For RoHs compatible products, AUO will add RoHS for identification.

Note: The green Mark will be present only when the green documents have been ready by AUO internal green team. (definition of green design follows the AUO green design checklist.)

- **Carton Label**


AU Optronics QTY : 4

MODEL NO: T315XW04 V3

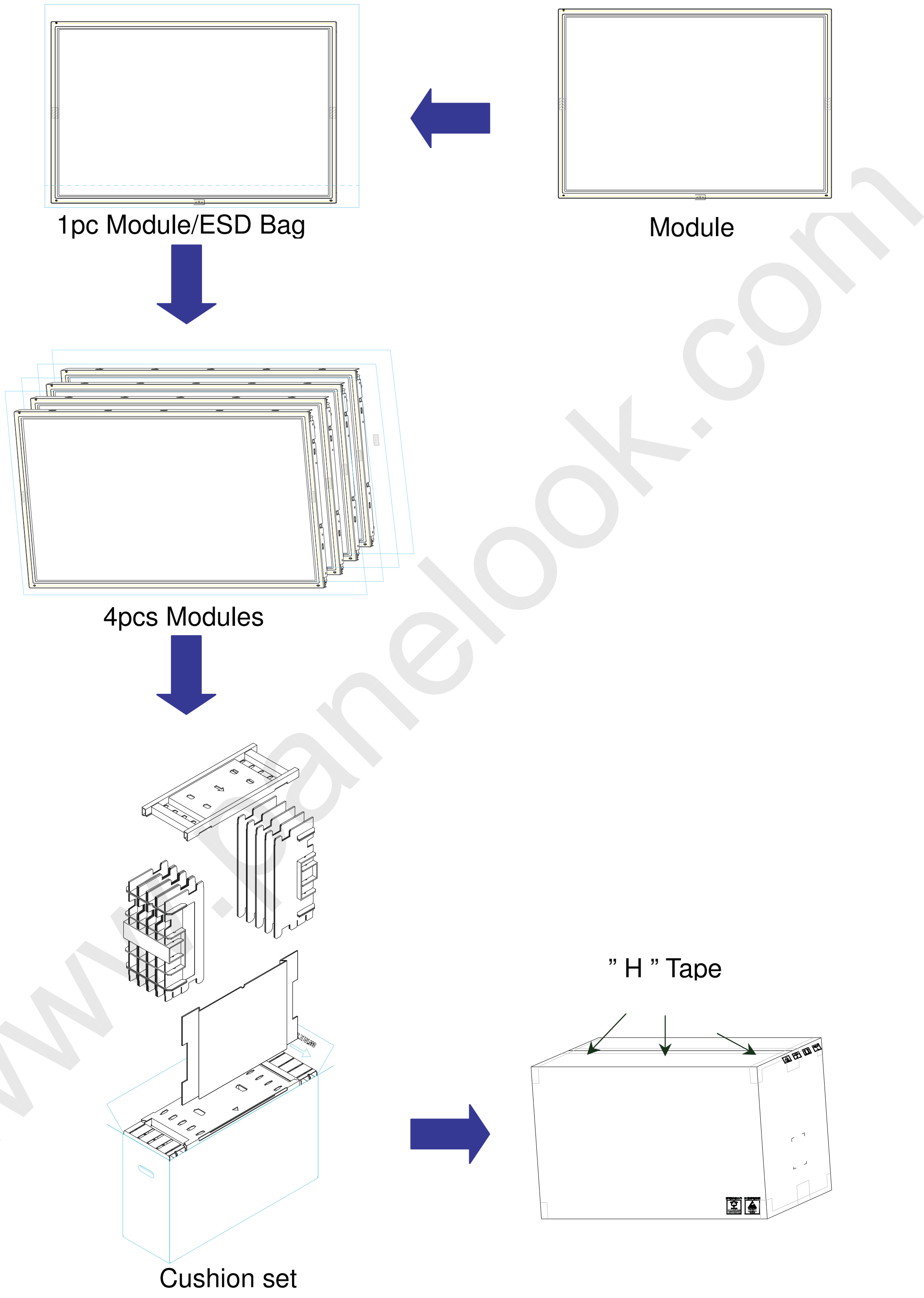
PART NO: XX.XXXXX.XXX

CUSTOMER NO:

CARTON NO:

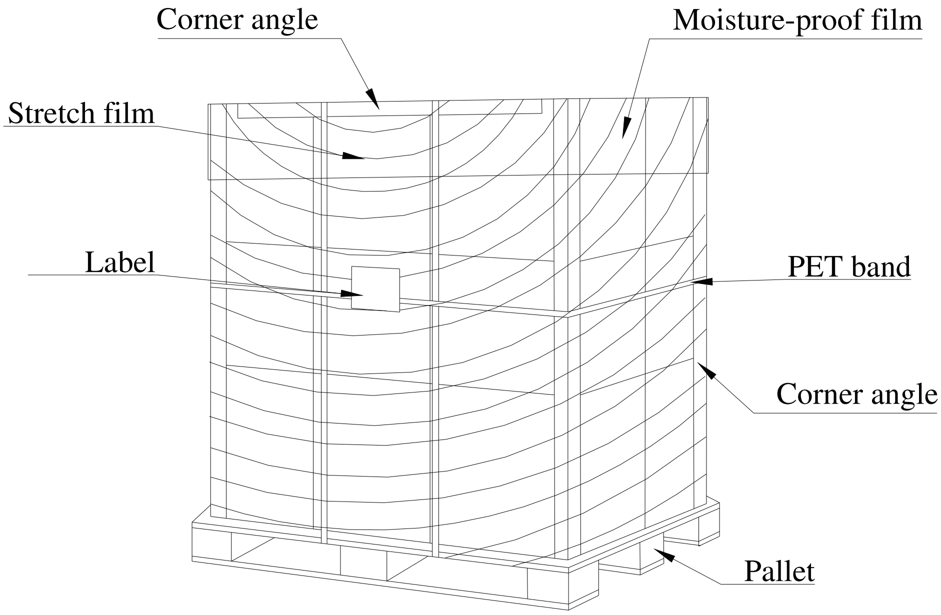
Made in XXXXXX *XXXXXX-XXXXXXXXXX*

8-2 Packing Methods:


1pc Module/ESD Bag
Module
4pcs Modules
Cushion set
" H " Tape

8-3 Pallet and Shipment Information

	Item	Specification			Packing Remark
		Quantity	Dimension	Weight (kg)	
1	Packing BOX	4pcs/box	832(L)mm*283(W)mm*545(H)mm	24.1	
2	Pallet	1	1150(L)mm*840(W)mm*132(H)mm	13	
3	Boxes per Pallet	8 boxes/Pallet			
4	Panels per Pallet	32pcs/pallet			
5	Pallet after packing	N/A	1150(L)mm*840(W)mm*1222(H)mm	205.8	


Corner angle
Moisture-proof film
Stretch film
Label
PET band
Corner angle
Pallet

12. Precautions

Please pay attention to the followings when you use this TFT LCD module.

9-1 Mounting Precautions

(1) You must mount a module using holes arranged in four corners or four sides.

(2) You should consider the mounting structure so that uneven force (ex. twisted stress) is not applied to module. And the case on which a module is mounted should have sufficient strength so that external force is not transmitted directly to the module.

(3) Please attach the surface transparent protective plate to the surface in order to protect the polarizer. Transparent protective plate should have sufficient strength in order to the resist external force.

(4) You should adopt radiation structure to satisfy the temperature specification.

(5) Acetic acid type and chlorine type materials for the cover case are not desirable because the former generates corrosive gas of attacking the polarizer at high temperature and the latter cause circuit broken by electro-chemical reaction.

(6) Do not touch, push or rub the exposed polarizer with glass, tweezers or anything harder than HB pencil lead. And please do not rub with dust clothes with chemical treatment. Do not touch the surface of polarizer for bare hand or greasy cloth. (Some cosmetics are detrimental to the polarizer.)

(7) When the surface becomes dusty, please wipe gently with absorbent cotton or other soft materials like chamois soaks with petroleum benzene. Normal-hexane is recommended for cleaning the adhesives used to attach front/ rear polarizer. Do not use acetone, toluene and alcohol because they cause chemical damage to the polarizer.

(8) Wipe off saliva or water drops as soon as possible. Their long time contact with polarizer causes deformations and color fading.

(9) Do not open the case because inside circuits do not have sufficient strength.

9-2 Operation Precautions

(1) The device listed in the product specification sheets was designed and manufactured for TV application

(2) The spike noise causes the mis-operation of circuits. It should be lower than following voltage: V=±200mV(Over and under shoot voltage)

(3) Response time depends on the temperature. (In lower temperature, it becomes longer..)

(4) Brightness of CCFL depends on the temperature. (In lower temperature, it becomes lower.) And in lower temperature, response time (required time that brightness is stable after turned on) becomes longer.

(5) Be careful for condensation at sudden temperature change. Condensation makes damage to polarizer or electrical contacted parts. And after fading condensation, smear or spot will occur.

(6) When fixed patterns are displayed for a long time, remnant image is likely to occur.

(7) Module has high frequency circuits. Sufficient suppression to the electromagnetic interference shall be done by system manufacturers. Grounding and shielding methods may be important to minimize the interface.

9-3 Electrostatic Discharge Control

Since a module is composed of electronic circuits, it is not strong to electrostatic discharge. Make certain that treatment persons are connected to ground through wristband etc. And don't touch interface pin directly.

9-4 Precautions for Strong Light Exposure

Strong light exposure causes degradation of polarizer and color filter.

9-5 Storage

When storing modules as spares for a long time, the following precautions are necessary.

(1) Store them in a dark place. Do not expose the module to sunlight or fluorescent light. Keep the temperature between 5℃ and 35℃ at normal humidity.

(2) The polarizer surface should not come in contact with any other object. It is recommended that they be stored in the container in which they were shipped.

9-6 Handling Precautions for Protection Film

(1) The protection film is attached to the bezel with a small masking tape. When the protection film is peeled off, static electricity is generated between the film and polarizer. This should be peeled off slowly and carefully by people who are electrically grounded and with well ion-blown equipment or in such a condition, etc.

(2) When the module with protection film attached is stored for a long time, sometimes there remains a very small amount of glue still on the bezel after the protection film is peeled off.

(3) You can remove the glue easily. When the glue remains on the bezel or its vestige is recognized, please wipe them off with absorbent cotton waste or other soft material like chamois soaked with normal-hexane.